REMARKS

This paper is filed in response to the Office Action mailed April 11, 2008. Claims 1-14 were pending in the application. No claims have been amended, added, or canceled. Therefore, claims 1-14 are still pending in the application and are submitted for reconsideration.

Request for Telephone Interview

If a final rejection is considered, the Examiner is respectfully requested to contact the undersigned by email to owend@howrey.com in order to schedule a telephone interview.

Rejection of Claims 1 and 3 under 35 USC 112

Claims 1 and 3 were rejected under section 112 second paragraph as being indefinite. Applicant respectfully traverses the rejection, for the reasons provided below.

Applicant initially notes that the specification and claims are addressed to one of skill in the art and indefiniteness should be judged from the viewpoint of one of skill in the art.

The following phrases from the claims were identified in the office action as being unclear:

(a) "the state of a vehicle chassis" – The office action states that it is unclear what state is being referred to. Claim 1 is a method for monitoring the state of a vehicle chassis. The specification begins by describing the difficulty in selecting appropriate maintenance intervals for a vehicle chassis sufficiently short that damage or deterioration in the state of a chassis element does not reach a critical state (para. 0002). The invention makes it possible to continuously monitor the state of chassis components affected by wear or ageing (para. 0007). The method of claim 1 is for monitoring this state, e.g. the damage or deterioration in the state of the vehicle chassis caused by, e.g. wear or ageing.

(b) "providing a model of the vehicle which continuously identifies parameters of the vehicle" – The office action states that it is unclear what parameter or value defines the model, and what parameters are being identified. Claim 1 does not require the model to be defined by any particular parameter or value. The model is a software representation of the vehicle chassis used for monitoring the state of the chassis (para. 0026, 0038). The parameters

identified by the model will depend on the measured physical variables used, as would be understood by one of skill in the art.

(c) "continuously compile modelled variables" – The office action states that it is unclear what type of value represents modeled variables. Claim 1 requires measured physical variables and modeled variables, and a comparison is made between them. The specification describes sensors attached to the vehicle chassis used to measure physical variables such as speed, acceleration, and force (paras. 0009, 0013, 0028), and gives examples, such as a vibration sensor on a bogie (para. 0035). The model generates modeled variables which are compared to the measured variables to identify deviations between the expected variable and the actual measured variable (para. 0009). The modeled variables are thus the same types of variables as the measured physical variables, as would be clearly understood by one of skill in the art.

(d) "simulatory prognosis of the vehicle behaviour" – The office action states that it is unclear what type of behavior of the vehicle is referred to. The specification describes monitoring the state of a vehicle chassis affected by wear or ageing (para. 0007). The method of claim 1 is for monitoring this state, e.g. the damage or deterioration in the state of the vehicle chassis caused by wear or ageing to predict the remaining lifetime (para. 0006, 0007). The parameters identified by the model are used in a simulatory prognosis of vehicle behaviour to generate the modelled variables. As discussed above, the modeled variables are the same types of variables as the measured physical variables, such as vibration of a bogie. Thus, the behaviour referred to is, e.g. the predicted amount of vibration of the bogie, which is compared with the measure vibration.

(e) The office action states that it is unclear what the difference between "measured variables" and modeled variables", and what types of vehicle values or parameters are involved. As discussed above, the specification describes sensors attached to the vehicle chassis used to measure physical variables such as speed, acceleration, and force (paras. 0009, 0013, 0028, claim 2), and gives examples, such as a vibration sensor on a bogie (para. 0035). The model generates modeled variables which are compared to the measured variables to identify deviations between the expected variable and the actual measured variable (para.

0009). The modeled variables are thus the same types of variables as the measured physical variables, as would be clearly understood by one of skill in the art.

(f) "performing a classification into classes of causes" – The office action states that it is unclear what type of classes or causes are being classified, and what type of parameter or values are used in the classification (note: claim 1 specifies "classes of causes" not "classes or causes" as stated in the office action). As discussed above, the specification describes a system for monitoring chassis components affected by wear and ageing (para. 0007). The cause of deviation between a measured variable (i.e. the current state of a chassis component) and a modelled variable (i.e. the state of a chassis component as predicted by the model) is classified into different classes of causes (para. 0009). The classes may define, for example, whether the cause of the deviation relates to inside or outside the vehicle, or where in the vehicle it relates (para. 0016). Claim 1 does not require any specific type of parameter or value to be used in such classifications. One of skill in the art would understand that such classifications could be made from various parameters or values depending on the type of variable at issue, e.g. where cause related to a variable measured by a vibration sensor mounted on a bogie (see para. 0035), the cause could be classified as inside the vehicle or as on a bogie.

(g) "evaluating a result of the classification" – The office action states that it is unclear what result is being evaluated. The classification results in a cause of deviation being assigned to a certain class. Based on this classification, a model of the deviation or damage evolution may be used to determine the remaining lifetime of the relevant component (para. 0027, Fig. 1).

(h) The office action states that it is unclear in claim 3 what is a critical state. Claim 3 requires "determining or updating a remaining lifetime of vehicle components before a critical state is reached or before a maintenance measure is needed." The specification begins by describing the difficulty in selecting appropriate maintenance intervals for a vehicle chassis sufficiently short that damage or deterioration in the state of a chassis element does not reach a critical state (para. 0002). The invention is for monitoring the damage or deterioration in the state of the vehicle chassis caused by, e.g. wear or ageing. In this context, a critical state is clearly a situation where damage or deterioration in the vehicle chassis has reached a point

where safety is compromised or imminent corrective action is required. Paragraph 0027 of the specification states: "Together with a model 11 of the deviation or damage evolution, the remaining lifetime of the identified causative component is determined in block 12. It is then decided in block 13 whether operating restrictions represented in block 14 are taken and when which maintenance measures, represented in block 15, must be taken." Thus, the "critical state" referred to in claim 3 corresponds to whether operating restrictions on the vehicle will be required.

(i) The office action states that it is unclear in claim 3 what value or parameter represents "damage evolution" and "ageing model." Claim 3 does not require the damage evolution or ageing model to represent any value or parameter. Paragraph 0014 of the specification states: "Additionally or alternatively, the processing unit comprises one or more damage evolution or ageing models of vehicle components with which the remaining lifetime before reaching a critical state or before a necessary maintenance measure is determined or updated." This describes a model which determines the remaining lifetime of a vehicle component by modelling the evolution of the damage detected or models the ageing process of the component at issue.

Applicant submits that the terms and phrases identified in the office action are sufficiently described in the specification to one of skill in the art to meet the definiteness requirements of section 112.

Rejection of Claims 1, 3-5 and 8-14

Claims 1, 3-5 and 8-14 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,745,151 issued to Marko et al.

Claims 2 and 6-7 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Marko in combination with and U.S. Patent No. 6,681,160 issued to Bidaud.

Applicants respectfully traverse the rejections for the reasons provided below.

Marko discloses measurement of physical variables and sending the data representing the measured variables to a data center (upon certain triggering events). This data, in the data center, is then compared to reference data patterns stored in the data center ("... The comparison may be based on pattern recognition or other analysis to identify "hits" or matches

between the incoming vehicle data and data patterns stored in database 16, each hit being representative of component failures or potential failures apparent in the data ...", see Marko, col. 4, lines 48 to 53). Subsequent to this comparison, a classification of the incoming data is done based on the match with certain static data patterns.

In addition to this classification process, Marko teaches a time-to-failure projection based on a trend analysis performed on data collected over time ("... In addition to capturing diagnostic data, the present invention is capable of capturing data far in advance of any failure detection on-board the vehicle. Such data is captured ... and analyzed for trend behavior to project the time-to-failure of systems under analysis ..."; see Marko, col. 5, lines 35 to 47). This analysis is obviously done without correlation to the diagnostic process ("... far in advance of any failure detection on-board ..."; see Marko, col. 5, lines 35 to 47).

Although it is possible that the time-to-failure projection uses a simulatory prognosis of the vehicle behavior on the basis of captured data and some kind of model of the vehicle, this is not disclosed in Marko. Furthermore, there is no indication in Marko that a simulatory prognosis is used in a classification process into classes of causes. Since Marko is completely silent as to this classification, it would be expected that if a classification was done at all, it would be done on the basis of a static data comparison process as outlined above, consistent with the overall teaching of Marko.

In contrast, claim 1 requires a comparison of the measured data with data (compiled modeled variables) obtained in a continuous simulatory prognosis based on a vehicle model, and this comparison is the basis for the classification into classes of causes. Thus, according to claim 1 (and unlike Marko) there is no comparison to previously determined "static" data but a comparison to continuously updated data (i.e. "dynamic" data) obtained in a simulatory prognosis and used as the reference data for the comparison and, thus, the classification.

The simulatory prognosis according to Marko is not the basis for any classification into classes of causes but is merely a process that, if done at all, would be executed after the classification is done (in the conventional way with "static" reference data).

Consequently, Marko neither anticipated nor renders obvious independent claims 1 and 9. Claims 2-8 depend from claim 1, and claims 10-14 depend from claim 9, and are thus patentable on that basis.

In view of the above, Applicants respectfully request withdrawal of the rejections and allowance of claims 1-14.

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Extension of Time

Any extension of time that may be deemed necessary to further the prosecution of this application is hereby requested.

Authorization to Charge Fees

The Commissioner is authorized to charge any additional fees which may be required, or credit any overpayment, to Deposit Account No. 08-3038, referencing the docket number shown above.

Authorization to Communicate via email

Pursuant to MPEP 502.03, authorization is hereby given to the USPTO to communicate with Applicant's representative concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file. Applicant's representative, David P. Owen, can be reached at email address owend@howrey.com.

The Examiner may also contact the undersigned by telephone at the number given below in order to resolve any questions (note, this telephone number is an Amsterdam phone number, Amsterdam time is 6 hours ahead of US east coast time).

Respectfully submitted,

/david p owen/

David P. Owen
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Date: 11 May 2009

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